

B3
Amended

power sources that are different from said ground power source so as to apply a second drive voltage pulse between the first and second electrodes.

Sub
C6
B4

26. ~~(AS TWICE AMENDED HEREIN)~~ A method of driving a plasma display panel device having first and second electrodes provided apart from one another and a ground power source, and performing a display by generating a discharge between said first and second electrodes, wherein:

said first and second electrodes are changed from a state of being connected to a first power source, different from said ground power source, to a state of being connected to a second power source, different from said ground power source, and a drive discharge voltage is applied between said electrodes when a drive voltage is to be applied between said first and second electrodes.

REMARKS

In accordance with the foregoing, the claims have been amended to improve form and to better clarify salient features of the invention. Further, claim 25 is incorporated in claim 24 and claim 25 is canceled. In addition, claim 15/1 is canceled since being an inadvertent duplicate of claim 14/1 (i.e., claim 15/1 was originally claim 15/2 and claim 2 was canceled).

No new matter is presented.

Approval and entry of the foregoing claim amendments are respectfully requested.

ITEMS 3 AND 4: ANTICIPATION REJECTIONS UNDER 35 USC 102(b) OF ALL PENDING CLAIMS 1 AND 3-26 BY ANDOH ET AL. AND SAKUMA, RESPECTIVELY

These rejections repeat identically the rejections of the first Office Action mailed December 3, 2001 herein.

The response as to this identical rejection of the first Office Action is incorporated herein by reference.

ITEM 5: EXAMINER'S RESPONSE TO ARGUMENTS FILED MAY 3, 2002

The Examiner takes the position that Andoh does not disclose that the x and y electrodes are connected to ground level and thus disputes the arguments which were presented in the last response at page 9, following the heading on that page. Further, the Examiner asserts that Figs. 3, 4C and 4D of Andoh "shows the reference level is not a ground level, for example...the reference level for X and Y electrodes are Vs which has voltage source as indicated in Fig. 3."

Although the Examiner's point is not fully understood, Fig. 3 does show a 0v. level with several, spaced positive voltages along a vertical axis bearing labels corresponding to some of the voltages designated in Figs. 4A-4D. However, under the Examiner's own argument, the base line -- for example "V_{xw}" in Fig. 4A -- is the equivalent of a ground "0" level in Fig. 3. Thus, the Andoh drive circuit uses voltages formulated on the same basis as shown in the prior art Figs. 24A and 24B in the present application -- i.e., each of the x drive voltages risers from ground "0" to +V_{wx} for the write pulse P and the y voltage likewise rises from ground ("0") to +V_{ey} -- and, in both instances, the pulse, at its trailing edge, returns to ground.

By contrast, as shown in Fig. 4A, the voltage swing of the X and the Y waveforms is between -V₁ and +V₂, passing through "0v." in that rise and, as well, passing through "0v." in the fall from +V₂ to -V₁. Thus, the rise does not begin from, nor does the fall end, at ground.

With more particular reference to Figs. 4C and 4C, V_{xs} and V_{ys} represent pulse wave forms applied to the X and Y electrodes, respectively, of each pair. In V_{xs}, the positive pulse of +V_{sa}/2 and the negative pulse of -V_{sa}/2 are applied within T_w and another positive pulse +V_s/2 and another negative pulse of -V_s/2 are applied within T_d. V_{sa} and V_s are not ground level according to Fig. 3. However, the pulse wave V_{xs} starts from the ground level and changes (i.e., rises or falls, respectively) to +V_{xa}/2 or -V_{sa}/2, and then returns to the ground level. Likewise, the pulse wave V_{xs} starts from the ground level and changes (i.e., rises or falls, respectively) to +V_s/2 or -V_s/2, and returns to ground level. V_{ys} has the same wave form.

As long as the pulse wave starts at the ground level or returns to the ground level, there is a noise on the ground level which causes a level change in the ground level. According to the wave form of V_{xs} and V_{ys}, the pulse wave returns to the ground level. Therefore, the noise is generated on the ground level.

By contrast and according to the present invention, as recited generically in at least claim 1 -- and, variously generically or more specifically in each of the independent claims -- the

drive circuit applies power sources different from ground level so as to apply a first drive voltage when applying the drive voltage pulse, and applies power sources different from ground level so as to apply a second drive voltage when completing the drive voltage pulse. The "power sources" may be different or the same, as shown in the various different embodiments. At the front edge of the drive voltage pulse, the sustain plasma discharge occurs between the first and second electrodes, and, at the back edge of the drive voltage pulse, the capacitor charge/discharge occurs between the electrodes. Therefore, at both of the front and the back edges, the voltage of the first and second electrodes is different from the ground level.

However, in Andoh, at the back edge of the pulse, the voltage of the first and second electrodes is the ground level. Andoh thus is a "teaching-away" from the present, claimed invention, and the deficiencies thereof are not overcome by Sakuma nor has prima facie obviousness of the combination been demonstrated.

CONCLUSION

In accordance with the foregoing, it is respectfully submitted that the Examiner errs in the continued contention that Andoh and/or Sakuma somehow teach use of power sources different from a ground power source, in the context in which that expression is employed in the pending claims.

It is respectfully submitted that the claims patentably distinguish over the art of record and, there being no other objections or rejections, that the application is in condition for allowance, which action is earnestly solicited.

Should Examiner not agree with applicants, it is requested that the Examiner call the applicants' undersigned counsel of record to schedule an interview for personally discussing this issue, which appears to be central to a continuing disagreement between the Examiner and the applicant as to the issue of patentability of the pending claims.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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Date: September 30, 2002

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE****IN THE CLAIMS:**

Please CANCEL claims 15 and 25.

Please AMEND the following claims:

1. (TWICE AMENDED) A plasma display panel device having first and second electrodes, spaced [provided] apart from one another, and a ground power source[,] and performing a display by generating a discharge between said first and second electrodes, said plasma display panel device comprising:

a drive circuit applying a drive voltage pulse between said first and second electrodes;
wherein

[a drive circuit that connects said first and second electrodes to power sources that are different from said ground power source so as to apply a drive voltage between the two electrodes,] when the drive voltage [pulses are] pulse is to be applied between said first and second electrodes, [and so as to apply a drive voltage between the two electrodes, upon completion of the application of drive voltage pulses after said drive voltage pulses have been applied] said drive circuit connects said first and second electrodes to power sources that are different from said ground power source so as to apply a first drive voltage between said first and second electrodes[,] and

when completing said drive voltage pulse, said drive circuit connects said first and second electrodes to power sources that are different from said ground power source so as to apply a second drive voltage between the first and second electrodes.

3. (TWICE AMENDED) A plasma display panel device having first and second electrodes, spaced [provided] apart from one another, and a ground power source[,] and performing a display by generating a discharge between said first and second electrodes, said plasma display panel device comprising:

a drive circuit that changes said first and second electrodes from a first state of being connected to a first power source, different from said ground power source, to a second state of being connected to a second power source, different from said ground power source, so as to apply a drive voltage between [the two] said first and second electrodes when a drive voltage

[pulses are] pulse is to be applied between said first and second electrodes.

4. (TWICE AMENDED) The plasma display panel device according to claim 3, wherein:

said drive circuit returns said first [or] and second electrodes to [a] the first state₁ of being connected to said first power source₁ upon completion of the application of said drive voltage pulse.

5. (TWICE AMENDED) A plasma display panel device having first and second electrodes, spaced [provided] apart from one another₁ and a ground power source[,] and performing a display by generating a discharge between said first and second electrodes, said plasma display panel device comprising:

a drive circuit that changes said first and second electrodes from a first state of being connected to a first power source, different from said ground power source, to a second state of being respectively connected to second and third power sources, different from said ground power source, so as to apply a drive voltage between the two electrodes when a drive voltage [pulses are] pulse is to be applied between said first and second electrodes.

6. (TWICE AMENDED) The plasma display panel device according to claim 5, wherein:

said drive circuit returns said first and second electrodes to [a] the first state₁ of being connected to said first power source₁ upon completion of the application of said drive voltage pulse.

7. (TWICE AMENDED) A plasma display panel device having first and second electrodes, spaced [provided] apart from one another₁ and a ground power source and performing a display by generating a discharge between said first and second electrodes, said plasma display panel device comprising:

a drive circuit that changes said first and second electrodes from a first state of being connected to first and second power sources, different from said ground power source, to a second state of being connected to a third power source, different from said ground power source, so as to apply a drive voltage between the two electrodes when a drive voltage [pulses are] pulse is to be applied between said first and second electrodes.

8. (TWICE AMENDED) The plasma display panel device according to claim 7, wherein:

said drive circuit returns said first [or] and second electrodes to [a] the first state₁ of being connected to said first or second power source₁ upon completion of the application of said drive voltage pulses.

9. (TWICE AMENDED) A plasma display panel device having first and second electrodes, spaced [provided] apart from one another₁ and a ground power source and performing a display by generating a discharge between said first and second electrodes, said plasma display panel device comprising:

a drive circuit that changes said first and second electrodes from a first state of being respectively connected to first and second power sources, different from said ground power source, to a second state of being respectively connected to third and fourth power sources, different from said ground power source, so as to apply a drive voltage between the two electrodes when a drive voltage [pulses are] pulse is to be applied between said first and second electrodes.

10. (TWICE AMENDED) The plasma display panel device according to claim 9, wherein:

said drive circuit returns said first and second electrodes to [a] the first state₁ of being respectively connected to said first and second power sources₁ upon completion of the application of said discharge voltage pulse.

11. (AS ONCE AMENDED) The plasma display panel device according to claim 5, wherein:

reversed-polarity discharge voltage pulses are applied to said first and second electrodes.

12. (AS ONCE AMENDED) The plasma display panel device according to claim 7, wherein:

reversed-polarity discharge voltage pulses are applied to said first and second electrodes.

13. (AS ONCE AMENDED) The plasma display panel device according to claim 9, wherein:

reversed-polarity discharge voltage pulses are applied to said first and second electrodes.

14. (AS ONCE AMENDED) The plasma display panel device according to claim 1, further having a control portion that is connected to said ground power source and that supplies a control signal to said drive circuit.

16. (AS ONCE AMENDED) The plasma display panel device according to claim 3, further having a control portion that is connected to said ground power source and that supplies a control signal to said drive circuit.

17. (AS ONCE AMENDED) The plasma display panel device according to claim 5, further having a control portion that is connected to said ground power source and that supplies a control signal to said drive circuit.

18. (AS ONCE AMENDED) The plasma display panel device according to claim 7, further having a control portion that is connected to said ground power source and that supplies a control signal to said drive circuit.

19. (AS ONCE AMENDED) The plasma display panel device according to claim 9, further having a control portion that is connected to said ground power source and that supplies a control signal to said drive circuit.

20. (AS ONCE AMENDED) The plasma display panel device according to claim 3, wherein:

the potential of said ground power source is between the potential of said first power source and the potential of the second power source, and a third electrode is maintained at the potential of the ground power source during the application of said drive voltage pulse.

21. (AS ONCE AMENDED) The plasma display panel device according to claim 5,

wherein:

the potential of said ground power source is between the potential of said first power source and the potential of the second power source, or is between the potential of said first power source and the potential of the third power source, and a third electrode is maintained at the potential of the ground power source during the application of said drive voltage pulse.

22. (TWICE AMENDED) A plasma display panel device that performs a display by generating a discharge between first and second electrodes [provided] spaced adjacently along a display line, said plasma display panel device comprising:

a control circuit, connected to a ground power source, [for] generating a control signal; and

a drive circuit that drives said first and second electrodes in response to said control signal wherein, when a drive voltage [pulses are] pulse is to be applied to said first or said second electrode, said drive circuit supplies a start voltage of said drive voltage pulse[s] ₁ from a first power source that is different from said ground power source₁ to said first or said second electrode, and supplies an end voltage of said drive voltage pulse[s] ₁ from a second power source that is different from said ground power source, to said first or said second electrode.

23. (TWICE AMENDED) A plasma display panel device according to claim 22, further comprising:

an address electrode intersecting with said first and second electrodes, wherein the address electrode is maintained at the ground potential, between the potentials of said first and second electrodes, when said drive voltage [pulses are] pulse is to be applied to the first and second electrodes.

24. (TWICE AMENDED) A method for driving a plasma display panel device having first and second electrodes, spaced [provided] apart from one another₁ and a ground power source and performing display by generating a discharge between said first and second electrodes, [wherein] comprising:

[said first and second electrodes are connected to a power source that is different from said ground power source and a drive voltage is applied between said electrodes when drive voltage pulses are to be applied between said first and second electrodes]

applying a first drive voltage pulse between said first and second electrodes by

connecting said first and second electrodes to power sources that are different from said ground power source; and

when completing said drive voltage pulse, connecting said first and second electrodes to power sources that are different from said ground power source so as to apply a second drive voltage pulse between the first and second electrodes.

26. (TWICE AMENDED) A method of driving a plasma display panel device having first and second electrodes provided apart from one another and a ground power source, and performing a display by generating a discharge between said first and second electrodes, wherein:

said first and second electrodes are changed from a state of being connected to a first power source, different from said ground power source, to a state of being connected to a second power source, different from said ground power source, and a drive discharge voltage is applied between said electrodes when a drive voltage [pulses are] is to be applied between said first and second electrodes.